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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,768

04/05/2006

Karine Valle

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BRINKS, HOFER, GILSON & LIONE
P.O. BOX 1340
MORRISVILLE, NC 27560

EXAMINER

CHOI, LING SIU

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

08/06/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/542,768	Applicant(s) VALLE ET AL.	
	Examiner Ling-Siu Choi	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2009 and 20 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 31-67 is/are pending in the application.
- 4a) Of the above claim(s) 50-60 and 63-65 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-49, 61, 62, 66 and 67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/14/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the Election / Restriction requirement filed 05/21/2009 and the Preliminary Amendment filed 07/20/2005. Claims 1-30 were canceled and claims 31-67 have been added. Claims 31-67 are now pending, wherein claims 31-48, 61-62, and 65-67 have been elected with traverse [claims 63-65 are erroneously grouped into Group I and now they are re-grouped into Group III].
2. In view of the argument, if Group I is found allowable and claims which cites the limitations leading to allowability of Group I, the claims will be rejoined with Group I.

Specification

3. The disclosure is objected to because of the following informalities: Page 19, a subtitle "BRIEF DESCRIPTION OF THE DRAWINGS:" is missing.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. **The following is a quotation of the second paragraph of 35 U.S.C. 112:**

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claim 41 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 41, line 3, “ $^{+}NR_3X^{-}$ ” causes indefiniteness because “ NR_3^{2+} ” does not carry the positive charge.

Claim Analysis

6. Summary of Claim 31:

An organic-inorganic hybrid material comprising two phases:	
	a first, mineral phase comprising a structured mesoporous network with open porosity; and
	a second, organic phase comprising an organic polymer, said organic phase not participating in creating the structured mesoporous network of the mineral phase and being essentially not present inside the pores of the structured mesoporous structure of the mineral phase

Claim Rejections

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim Rejections - 35 USC § 102

9. Claims 31, 35-36, 38-43, 46-48, 62, and 67 are rejected under 35 U.S.C. 102(b) as being anticipated by Bardot et al. (US 5,342,521).

Bardot et al. disclose a reverse osmosis or nanofiltration membrane [an organic-inorganic hybrid material], comprising a porous inorganic material support coated on one face with a **first mesoporous, inorganic material layer** having a mean pore radius **below 10 nm** and a **second active layer** located on the first mesoporous layer and having a thickness of 0.1-1 μm , **prepared from an organic polymer** selected from the group consisting of sulfonated polysulfones, polybenzimidazolones, polyvinylidene fluorides having diaminoethyl methacrylate grafted thereon, and perfluorine ionomers, wherein the inorganic material of the first mesoporous layer is titanium dioxide, zirconium dioxide or alumina (claims 1-3). Thus, the present claims are anticipated by the disclosure of Bardot et al.

Claim Rejections - 35 USC § 102/103

10. Claims 31-34, 37, 42-46, 49, 61, and 67 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Brinker et al. (US 6,270,846 B1).

Brinker et al. disclose a high-porosity, surfactant-templated thin film [an organic-inorganic hybrid material] obtained by evaporation-induced self-assembly method, the method comprising: (A) mixing a precursor sol, a solvent, water, **a surfactant**, and a **hydrophobic polymer** to form a homogeneous mixture, wherein the hydrophobic polymer is soluble in the sol and the surfactant is at a concentration less than the critical micelle concentration; (B) coating a substrate with the homogeneous mixture to form a thin film, the coating inducing evaporation of a portion of the solvent to produce a surfactant-stabilized microemulsion dispersed within a hybrid surfactant - silica matrix; and (C) heating the thin film to form a high-porosity, surfactant- and microemulsion-templated thin film, wherein the surfactant is selected from the group consisting of sulfates, sulfonates, phosphates, carboxylic acids, alkylammonium salts, gemini surfactants, cetylmethylpiperidinium salts, dialkyldimethylammonium, primary amines, poly(oxyethylene) oxides, octaethylene glycol monodecyl ether, octaethylene glycol monohexadecyl ether and block copolymers; the hydrophobic polymer is selected from the group consisting of polypropylene oxide and polypropylene glycol methylacrylate; and the precursor sol is selected from the group consisting of tetraethylorthosilicate,

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tetramethylorthosilicate, titanium butoxide, titanium iso-propoxide, zirconium n-butoxide, and aluminum iso-propoxide (claims 1-5). In view of the process used to form the organic-inorganic hybrid material being substantially identical to one used in the present invention, the organic-inorganic hybrid material would meet the limitations set in the present claims. Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. **In re Best**, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); **In re Fitzgerald**, 205 USPQ 594 (CCPA 1980).

Claim Rejections - 35 USC § 102/103

11. Claim 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bardot et al. (US 5,342,521) in view of Wu (US 6,465,052).

Bardot et al. disclose a reverse osmosis or nanofiltration membrane [an organic-inorganic hybrid material], comprising a porous inorganic material support coated on one face with a **first mesoporous, inorganic material layer** having a mean pore radius **below 10 nm** and a **second active layer** located on the first mesoporous layer and having a thickness of 0.1-1 μm , **prepared from an organic polymer** selected from the group consisting of sulfonated polysulfones, polybenzimidazalones, polyvinylidene fluorides having diaminoethyl methacrylate grafted thereon, and perfluorine ionomers, wherein the inorganic material of the first mesoporous layer is titanium dioxide, zirconium dioxide or alumina (claims 1-3).

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The difference between the present claim and the disclosure of Bardot et al. is the requirement of europium or gadolinium to replace titanium, zirconium, or aluminum in.

Wu disclose a method to produce a nano-porous coating onto a solid substrate, comprising the use of “.....**titanium (Ti), zirconium (Zr)**, hafnium (Hf),**aluminum (Al)**,..... gallium (Ga), indium (In), and thallium (Tl). Lanthanides: lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), promethium (Pm), samarium (Sm), **europium (Eu), gadolinium (Gd)**,.....” (col. 1, lines 12-26; col. 8, lines 20-51). Thus, the use of titanium, zirconium, or aluminum is equivalent to or exchangeable with the use of europium or gadolinium in forming nanoporous coating. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the disclosure of Bardot et al., thereby obtaining the present invention.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Ling-Siu Choi/

Primary Examiner, Art Unit 1796

July 15, 2009

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